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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,658	07/02/2003	Michael P. Galligan	4576/4581A(CON)/ENG0012-0	5534

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BASF CATALYSTS LLC
100 CAMPUS DRIVE
FLORHAM PARK, NJ 07932

EXAMINER	
NGUYEN, NGOC YEN M	
ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
07/14/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

phyllis.servon@basf.com
linda.komorowski@basf.com
USPTONotices@basf.com

Office Action Summary	Application No.	Applicant(s)	
	10/612,658	GALLIGAN ET AL.	
	Examiner	Art Unit	
	Ngoc-Yen M. Nguyen	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,6,30-35 and 37-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6,30-35 and 37-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-6, 31-34,37-38, 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al (4,455,281) in view of EP 0 831 211.

Ishida et al discloses a method of producing a plate-shaped catalyst unit for NO_x reduction of exhaust gas wherein the catalytic substance if prevented from falling off (note column 2, lines 17-10).

The catalyst unit is produced by a method comprising the steps of spraying molten metal upon the surfaces of a metal plate to allow the molten metal to accumulate thereon to form rough surfaces and depositing a catalyst containing titanium and at least another catalytic material for NO_x reduction of exhaust gas onto said rough surfaces whereby the catalyst is firmly secured on said rough surfaces (note claim 1). Ishida '281 further discloses that forming the surfaces of the metal plate into rough surfaces is effected by molten metal spraying. In the typical case, a metal wire is heated to be molten by contact resistance of electricity, an electric arc or high temperature flames, and molten metal thus obtained are sprayed together with gas such as compressed air through nozzles on the surfaces of the metal plate in the forms of

very small droplets of molten metal allowing the molten metal to solidly secured thereto. As the molten metal sprayed, the same type of material as the metal plate is preferred. Then a catalytic substance is attached onto the surfaces of the metal plate formed into rough surfaces by the molten metal spraying (note column 4, line 62 to column 5, lines 13).

Thus, Ishida '281 fairly teaches that the formation of the rough surfaces by electric arc process, such rough surfaces are considered the same as the claimed anchor layer, would facilitate the bonding between the catalytic substance and the metal carrier.

The metal plate can be thin steel plates, such as ASTM type 430, type 410 and type 304 (note column 4, lines 53-61). Ishida '281 also discloses that a metal wire mesh can be used instead of metal plate (note column 1, lines 55-58). Moreover, the metal plate can be subjected to bending work as shown in Figures 3-4, when those bent plates are piled up, bent portions hold spaces there between, whereby spacers which would otherwise be necessary can be saved, resulting in increased catalytic area (note column 3, lines 61-68). The shapes shown in Figures 3-4 are considered as having "accordion pleats" or "corrugated" structure. The metal plate in Ishida '281 can also be perforated metal plate (note Figures 7-9).

Since the metal plate in Ishida '281 can be bent, one skilled in the art would be able to use such metal plate to form a conformable catalyst member as required in the instant claims.

For the limitations "to be mounted…an open discharge end", "when the conformable catalyst member is bent…", or "for treating noxious components of engine exhaust gas", such limitations are considered as an intended use and regarding such the intended use limitation, it is noted that this is merely a recitation of the intended use of the claimed catalyst body, and that the claimed catalyst body does not depend on the intended use for completeness, but instead the limitations of the catalyst body are able to stand alone; see MPEP. 2111.02 and 2114. Also, it is well settled that terms merely setting forth intended use for, or a properly inherent in, an otherwise old composition do not differentiate the claimed composition from those disclosed in the prior art. ***In re Pearson 181 USPQ 641*** and it is contrary to spirit and patent laws that patents be granted for old compositions of matter based on new uses of compositions where uses consists merely in employment of compositions; patentee is entitled to every use of which invention is susceptible, whether such use be known or unknown to him. ***In re Thuau, 57 USPQ 324.***

The difference is Ishida '281 does not disclose that a tube of corrugated construction.

EP '211 discloses an exhaust emission control device for internal combustion engines (note column 1, lines 11-19). Such device can have a catalytic metal bearing (or support) member that can be a hollow cylinder (i.e., tube), which is made of a porous metal sheet, (note Figures 12-13 and column 11, lines 39-42) or a corrugated porous plate (note Figure 16D). EP '211 further discloses that the "steel sheet" bearing catalytic metal should be understood as not being limited to the construction described

in relation to various embodiments and modifications and also as not being limited to the porous sheet (note column 14, lines 17-22). Thus, EP '211 fairly suggests that the hollow cylinder can be made from other type of metal sheet, such as the corrugated porous plate of Figure 16D.

EP '211 can be further applied to teach that the catalyst can be fit into a curve or a bent portion of an exhaust pipe (note Figures 16 A-B).

EP '211 further discloses that a support structure can be used (note Figures 5-6, item 23 and column 6, lines 15-45). This support structure is considered the same as the mounting flange as required in the instant claim 32.

For the limitation regarding the shape of the support member, it would have been obvious to one skill in the art at the time the invention was made to shape the catalyst support member of Ishida '281 as a corrugated, perforated tube, as suggested by EP '211 because such shape is desired for catalyst used in internal combustion engine.

Claims 30, 35, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida '281 in view of EP '211 as applied to claims 1-3, 5-6, 31-34, 37-38, 40-43 above, and further in view of Donomoto (4,798,770) or Draghi et al (6,042,879).

The difference not yet discussed is Ishida '281 does not disclose that the anchor layer comprises nickel and aluminum.

However, Ishida '281 teaches that the molten metal sprayed is preferred to be the same type of material as the metal plate (note column 5, lines 9-10) and the metal plate is desired to be heat resistance and corrosion resistance (note column 4, lines 53-

61) such as stainless steel. However, the teaching of Ishida '281 should not be limited to just the exemplified metals.

Donomoto '770 discloses that alloys include Ni-Cr alloys, Ni-Al alloys containing 3-20% Al, Ni-Cr-Al alloys, Ni-Cr-Al-Y alloys are heat and corrosion resistant (note column 5, lines 51-63).

Alternatively, Draghi '879 teaches that MCrAlY, where M is nickel and/or cobalt, has corrosion and heat resistant properties (note column 4, lines 7-14). It would have been obvious to one skilled in the art to optimize the composition of the MCrAlY alloy to obtain the desired corrosion and heat resistant properties.

It would have been obvious to use any known metal that is heat and corrosion resistance, such as the MCrAlY alloys suggested by Donomoto '770 or Draghi '879 for the catalyst of Ishida '281 because heat and corrosion metal is desired in Ishida '281.

Claims 1-3, 5-6, 30-35, 37-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gorynin (5,204,302) in view of EP '211, optionally further in view of Rondeau (4,027,367) and Ishida '281.

Gorynin '302 discloses a catalyst comprising a metallic substrate; an adhesive sublayer diffusion bonded onto said substrate; and a catalytically active layer deposited on said sublayer and a porous layer deposited on said catalytically active layer (note claim 1). The adhesive sublayer is prepared from thermally reactive powders, such as those prepared from nickel and titanium, aluminum with at least one or more of Co, Cr, Mo, Ta, Nb, Ti or Ni or silicon with at least one or more of Ti, Nb, Cr, W, Co, Mo, Ni or

Ta (note column 2, lines 25-35). For the composition of the Ni alloy used, it would have been obvious to one of ordinary skill in the art to optimize such composition to obtain the best adhesive layer.

Gorynin '302 further discloses that the catalyst can be used for the purification of waste gases from an internal combustion engine (note column 1, lines 6-10). Gorynin '302 further discloses that because of the strong adhesion of the catalyst layers to the substrate, the catalyst can be corrugated and punched after deposition of the catalyst layer (note column 3, lines 57-60). Furthermore, Gorynin '302 discloses the step of rolling a corrugated catalyst strip into a cylinder (note column 9, lines 64-67).

The adhesive layer in Gorynin is formed by plasma spraying. The thermally reactive powders are introduced into a plasma torch and an exothermic reaction is initiated in the torch. The exothermic powders impinge the substrate where the reaction continues. The heat generated in the reaction causes diffusion of the sub-layer into the substrate resulting in a diffusion bond and strong adhesion of the sublayer to the substrate (note column 3, lines 6-15). Thus, Gorynin '302 fairly teaches that the plasma spraying process is used to obtain a diffusion layer, which improves the bonding between the two layers.

The process limitation in claim 6 is noted. However, when the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to applicant to establish that their product is patentably distinct and not the examiner to show the same process of making. *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

Optionally Rondeau '367 is applied as stated below to teach the use of electric arc to form the adhesive layer.

Rondeau '367 discloses a method of thermal spraying a substrate to deposit a self-bonding coating on such substrate, comprising supplying an electric arc thermal spray gun with a wire feed comprising an alloy of nickel and aluminum or titanium, and using such electric arc thermal spray gun, spraying said wire feed onto such substrate to coat the same thereby to establish diffusion bond between such coating and such substrate to provide a self-bonding coating on such substrate (note claim 1). Rondeau '367 discloses that several types of thermal spraying guns are available including combustion flame spray guns, e.g., the oxy-fuel gas type, plasma arc spray guns and electric arc spray guns. Combustion flame spray guns require a source of fuel, such as acetylene, and oxygen and the temperature produced therein are usually relatively low and often incapable of spraying materials having melting points exceeding 5,000^{o}F. Plasma arc spray guns are usually the most expensive type and they produce much higher temperatures than the combustion type, e.g. up to approximately 30,000^{o}F. Furthermore, plasma arc spray gun require a source of inert gas, such as argon, for creation of the plasma, and the gas flow rate and electric power therefor require extremely accurate control for proper operation. On the other hand an electric arc spray gun simply requires a source of electric power and a supply of compressed air or other gas, as is well known, to atomize and to propel the melted material in the arc to the substrate or target (note column 1, lines 25-43).

In undertaking the method of Rondeau '367 a number of important advantages are realized over the prior art. Firstly, the process uses an electric arc spray gun, which is more economically operated than other thermal spray equipment. Second, the material to be sprayed is supplied as a wire, which is more convenient to use than powder. The wire may be thin strand all the way up to a relatively thick rod as long as it is suitable for spraying through an electric arc spray gun. Third, the wire is readily formed as an alloy of the two primary materials nickel and aluminum or nickel and titanium. Fourth, the cohesive, adhesive and hardness attributes of the coating on an article formed by the method of the invention are generally equivalent to or better than corresponding attributes for a coating on an article sprayed with powder using other thermal spray devices (note paragraph bridging columns 2-3).

Rondeau '367 can be further applied to teach that the wire alloy comprises a minimum of 93% nickel, from 4 to 5.2% aluminum, from 0.25 to 1.00% Ti (note column 4, lines 15-20).

For the intended use limitations, note reasons as stated above.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use electric arc spraying method, instead of plasma spraying, to form the adhesive layer in Gorynin '302, as suggested by Rondeau '367 because electric arc spraying method can form the same diffusion bond between the two layers but it would cost less plus the additional advantages as stated above.

Optionally, Ishida '281 can be applied as stated above to teach that it is known in the art to form an adhesive layer on a substrate of a catalyst by using electric arc

spraying process before depositing the catalytic layer in order to form a catalyst that is highly resistant to peel off (i.e. better bonding) (note column 7, lines 62-67).

EP ‘211 is applied as stated above to teach the desired shape of the catalyst member, i.e., a hollow cylinder and the catalyst can be positioned in a curve or bent portion of an exhaust pipe.

It would have been obvious to roll the corrugated catalyst strip of Gorynin ‘302 into a hollow cylinder as suggested by EP ‘211 because such shape is desirable for an analogous application.

Applicant's arguments and declaration filed April 15, 2008 have been fully considered but they are not persuasive.

Applicants argue that claims 1 and 34 have been amended to clarify that the placement of the conformable catalyst member within a bent or curved portion of an exhaust pipe is positive limitation of the claims.

In Applicants’ claims 1 and 34, the limitation of “when the conformable catalyst member is bent along its length and mounted within a bent or curved portion of an exhaust pipe" is still considered as an intended use, note the "when" language. For claim 37, EP ‘211 is further applied to teach that the catalyst can be put in a bent or curved portion of an exhaust pipe (note Figure 16 A-B).

Applicants argue that Ishida does not teach or suggest a catalyst member that retains its catalytic coating following placement within a bent or curved portion of an exhaust pipe.

As stated in the above rejection, Ishida fairly discloses a catalyst comprising an intermetallic anchor layer between a metal substrate and a catalytic coating, just as what are required in Applicants' claims, thus, the catalyst of Ishida would inherently have the same properties as the claimed product, including the capability of retaining its catalytic coating. When the examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicants to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. *In re Fitzgerald et al.* 205 USPQ 594.

Applicants argue that Ishida does not teach or suggest that the catalyst can be placed in a bent or curved portion of an exhaust pipe.

EP '211 is applied to suggest such limitation.

Applicants argue that Uchida (i.e. EP '211) does not suggest to one skilled in the art that exhaust purifier 50 can be shaped to fit into a bent portion of an exhaust pipe.

In EP '211, Figures 16 A-B clearly show that the catalyst can be positioned in a bent portion of an exhaust gas. It should be noted that Applicants' claims are drawn to a product, not a process for producing product, therefore, when the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to applicant to establish that their product is patentably distinct and not the examiner to show the same process of making. *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324, i.e. the catalyst in the combined teaching of Ishida and EP '211 can be preformed with a shape that fit into the curved or bent portion of an exhaust gas before

depositing the anchor layer and the catalytic coating and/or the exhaust pipe can be formed around the catalyst so that the catalyst is within a curved or bent portion of the exhaust pipe.

The rejection of claims 30, 35 and 39 is maintained for the same reasons as stated above.

Applicants argue that for the rejection over Gorynin '302 in view of EP '211 and other secondary references, claims 1 and 34 positively require the placement of the catalyst member within a curved or bent portion of an exhaust pipe.

This argument is not persuasive for the same reasons as stated above.

The Declaration has been fully reconsidered in view of Applicants' comments, however, it is still not persuasive for the same reasons as stated above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner can normally be reached on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/
Primary Examiner, Art Unit 1793

nmn
July 12, 2008